

We claim:

2. The isolated polypeptide according to claim 1 wherein said polypeptide is selected from the group consisting of:

residues 15-163 of SEQ ID NO:2;
residues 46-163 of SEQ ID NO:2;
residues 15-170 of SEQ ID NO:2;
residues 46-170 of SEQ ID NO:2;
residues 15-234 of SEQ ID NO:2;
residues 46-234 of SEQ ID NO:2;
residues 15-229 amide of SEQ ID NO:2;
residues 15-230 of SEQ ID NO:2;
residues 15-345 of SEQ ID NO:2;
residues 46-345 of SEQ ID NO:2;
residues 164-345 of SEQ ID NO:2;
residues 235-345 of SEQ ID NO:2; and
residues 226-345 of SEQ ID NO:2.

3. An isolated polypeptide comprising a sequence of amino acids of the formula $R_1-R_2-R_3$, wherein:

R1 comprises a polypeptide of from 100 to 120 residues in length that is at least 90% identical to residues 46-163 of SEQ ID NO:2, and comprises a sequence motif C[KR]Y[DNE][WYF]X{11,15}G[KR][WYF]C (SEQ ID NO:4) corresponding to residues 104-124 of SEQ ID NO:2;

R2 is a polypeptide at least 90% identical to residues 164-234 of SEQ ID NO:2;

R3 is a polypeptide at least 90% identical in amino acid sequence to residues 235-345 of SEQ ID NO:2 and comprises cysteine residues at positions corresponding to residues 250, 280, 284, 296, 335, and 337 of SEQ ID NO:2; a glycine residue

at a position corresponding to residue 282 of SEQ ID NO:2; and a sequence motif CX{18,33}CXGXCX{6,33}CX{20,40}CXC (SEQ ID NO:3) corresponding to residues 250-337 of SEQ ID NO:2; and

each of x, y, and z is individually 0 or 1, subject to the limitations that:

at least one of x and z is 1; and
if x and z are each 1, then y is 1.

4. The isolated polypeptide of claim 3 wherein x=1.

5. The isolated polypeptide of claim 4 wherein R1 comprises residues 46-163 of SEQ ID NO:2.

6. The isolated polypeptide of claim 4 wherein R1 is at least 90% identical to residues 18-163 of SEQ ID NO:2.

7. The isolated polypeptide of claim 4 wherein y=1.

8. The isolated polypeptide of claim 7 wherein z=1.

9. The isolated polypeptide of claim 3 wherein said polypeptide comprises residues 46-229 of SEQ ID NO:2, residues 164-345 of SEQ ID NO:2, or residues 46-345 of SEQ ID NO:2.

10. The isolated polypeptide of claim 3 wherein z=1.

11. The isolated polypeptide of claim 10 wherein R3 comprises residues 235-345 of SEQ ID NO:2.

12. The isolated polypeptide of claim 10 wherein y=1.

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18. The isolated protein of claim 17 wherein said protein is a heterodimer.

19. The isolated protein of claim 18 wherein z is 1 and said second polypeptide is selected from the group consisting of VEGF, VEGF-B, VEGF-C, VEGF-D, PlGF, PDGF-A, and PDGF-B.

20. The isolated protein of claim 17 wherein said protein is a homodimer.

21. The isolated protein of claim 20 wherein z=1.

22. The isolated protein according to claim 21 wherein each of said first and second polypeptides comprises residues 235-345 of SEQ ID NO:2.

23. The isolated protein of claim 20 wherein x=1.

24. The isolated protein of claim 23 wherein each of said first and second polypeptides comprises residues 46-163 of SEQ ID NO:2.

25. An isolated polynucleotide of up to approximately 4 kb in length, wherein said polynucleotide encodes a polypeptide comprising a sequence of amino acids of the formula $R1_x-R2_y-R3_z$, wherein:

R1 comprises a polypeptide of from 100 to 120 residues in length that is at least 90% identical to residues 46-163 of SEQ ID NO:2, and comprises a sequence motif C[KR]Y[DNE][WYF]X{11,15}G[KR][WYF]C (SEQ ID NO:4) corresponding to residues 104-124 of SEQ ID NO:2;

R2 is a polypeptide at least 90% identical to residues 164-234 of SEQ ID NO:2;

R3 is a polypeptide at least 90% identical in amino acid sequence to residues 235-345 of SEQ ID NO:2 and comprises

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each of x , y and z is individually 0 or 1, subject to the limitations that:

32. A method of producing a protein comprising:

culturing a cell into which has been introduced an expression vector according to claim 28, whereby said cell expresses the polypeptide encoded by the DNA segment; and recovering the expressed protein.

33. An antibody that specifically binds to an epitope of a polypeptide according to claim 3.

34. The antibody of claim 33 which is a monoclonal antibody.

35. The antibody of claim 33 which is a single-chain antibody.

36. The antibody of claim 33 operably linked to a reporter molecule.

37. A method for detecting a genetic abnormality in a patient, comprising:

obtaining a genetic sample from a patient;

incubating the genetic sample with a polynucleotide comprising at least 14 contiguous nucleotides of SEQ ID NO:1 or the complement of SEQ ID NO:1, under conditions wherein said polynucleotide will hybridize to complementary polynucleotide sequence, to produce a first reaction product; and

comparing said first reaction product to a control reaction product, wherein a difference between said first reaction product and said control reaction product is indicative of a genetic abnormality in the patient.

38. A method of stimulating the growth of fibroblasts or smooth muscle cells comprising applying to said cells an effective amount of a protein of claim 17.

39. A method of activating a cell-surface PDGF alpha receptor, comprising exposing a cell comprising a cell-

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surface PDGF alpha receptor to the protein of claim 17,
whereby the protein binds to and activates the receptor.

41. A method of inhibiting zveg3 activity in a mammal comprising administering to the mammal an effective amount of a zveg3 antagonist.

43. An isolated, antisense polynucleotide that is the complement of the isolated polynucleotide of claim 25.

45. A method of inhibiting zveg3 production in a cell comprising administering to the cell the antisense polynucleotide of claim 44.